Resin-Coated Sand
Troubleshooting Guide

Core Making/Molding Issues

Breakage – Failure of core during the manufacture or handling process

Causes
- Over- or under-cured
- Shell build too thin
- Low resin content
- Poor compaction of core
- Improper cooling of core/mold

Poor Flowability – Cores that exhibit areas of poor compaction or do not fill completely in the blowing cycle

Causes
- Blow pressure too low
- Lack sufficient vents
- Vents plugged up
- Box temperature too hot
- Melt point of sand too low
- Base sand too angular
- Improper sized invest hole
- Moisture in air line
- Base sand too fine

Slow Invest Rate – Core or mold taking substantially longer time to build-up desired thickness

Causes
- Sand is too cold
- Box temperature too low
- Melt point of sand too high

Lamination – Separation of the cured surface from the interior shell wall

Causes
- Blow cycle too short
- Non-use of pulsating blow
- Moisture in air line

Peel Back – Layer of partially cured sand that falls away completely from the interior of the core

Causes
- Box temperature too high or too low
- Melt point too low
- Moisture in air line
- Base sand too coarse
- Jarring of machine in rollover stage

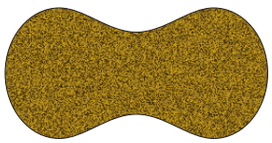
Sticking – Inability or difficulty in removing core/mold from pattern

Causes
- Blow pressure too high
- Box temperature too high or too low
- Scratched or damaged core box
- Excessive buildup on core box
- Under- or over-cured core
- Incorrect application of release agent

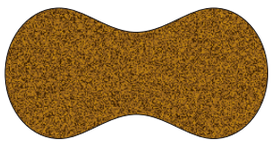
Lamination – Core or mold distortion on ejection of subsequent cooling from pattern

Causes
- Under-cured core
- Uneven ejection from the core box
- Uneven core box temperature
- Improper support of cores during cooling
- Excessive use of plasticizer in sand

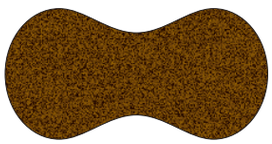
Lake Sand



Severely Under-Cured



Moderately Under-Cured



Perfectly Cured

Moderately Over-Cured

Severely Over-Cured

For more information about Resin-Coated Sand, please call: 800.243.9004 or email: Sales@CoviaCorp.com

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Core Making/Molding Issues

Cracking – Total failure of the core/mold during the casting process

Causes
- Over-cured core
- Lack of plasticizer in the sand
- Shell too thin
- Weak cores due to low resin content
- Improper screen distribution of base sand
- Extremely cold core
- Lack of print clearance for core in mold
- Sand too round, prone to veining

Gas Defects – Entrapped gas in the metal that was emitted from the core/mold

Causes
- Lack of venting in mold
- Permeability of base sand too low
- Resin content too high
- Poorly drained cores
- Excess free resin

Metal Penetration - Migration of molten metal into the core interface

Causes
- Poor density of core/mold
- Over-cured core surface
- Base sand too coarse
- Dirty core box
- Low fusion point of base sand
- Rough core surface

Nitrogen Defects – Porosity caused by the evolution of nitrogen gas emitted from the core

Causes
- Lack of nitrogen scavenger in sand
- Hexa level in sand too high

Orange Peel – Surface defect associated mainly with low carbon steels

Causes
- Iron oxide content in sand too low
- Clay in sand too low
- Lack of use of zircon, chromite and/or ceramic

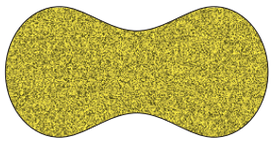
Poor Shakeout – The inability of the sand to flow freely from the core cavity of the casting

Causes
- Resin content too high
- Shell wall too thick
- Lack of shakeout additive

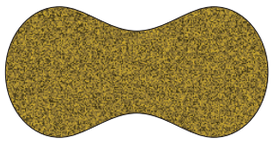
Veining – Thermal surface cracking of core that leads to irregularities on the casting's surface

Causes
- Use of round grain sand that is more prone to thermal expansion
- Lack of natural oxides in sand
- Improper screen distribution
- Pouring temperature too high
- Lack of anti-veining additive in sand
- Over-cured core/mold

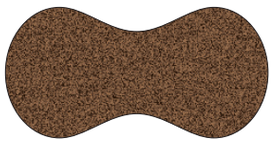
Silica Sand



Severely Under-Cured



Moderately Under-Cured



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